



# Green Your Backyard

## RainScapes Techniques and Tips



# Overview

- The Stormwater Connection
- RainScapes Program
  - *Rain Barrels*
  - *Conservation Landscaping*
  - *Tree Canopy*
  - *Pavement Removal* **New!**
- Sustainable Lawn Care
- In Your Home

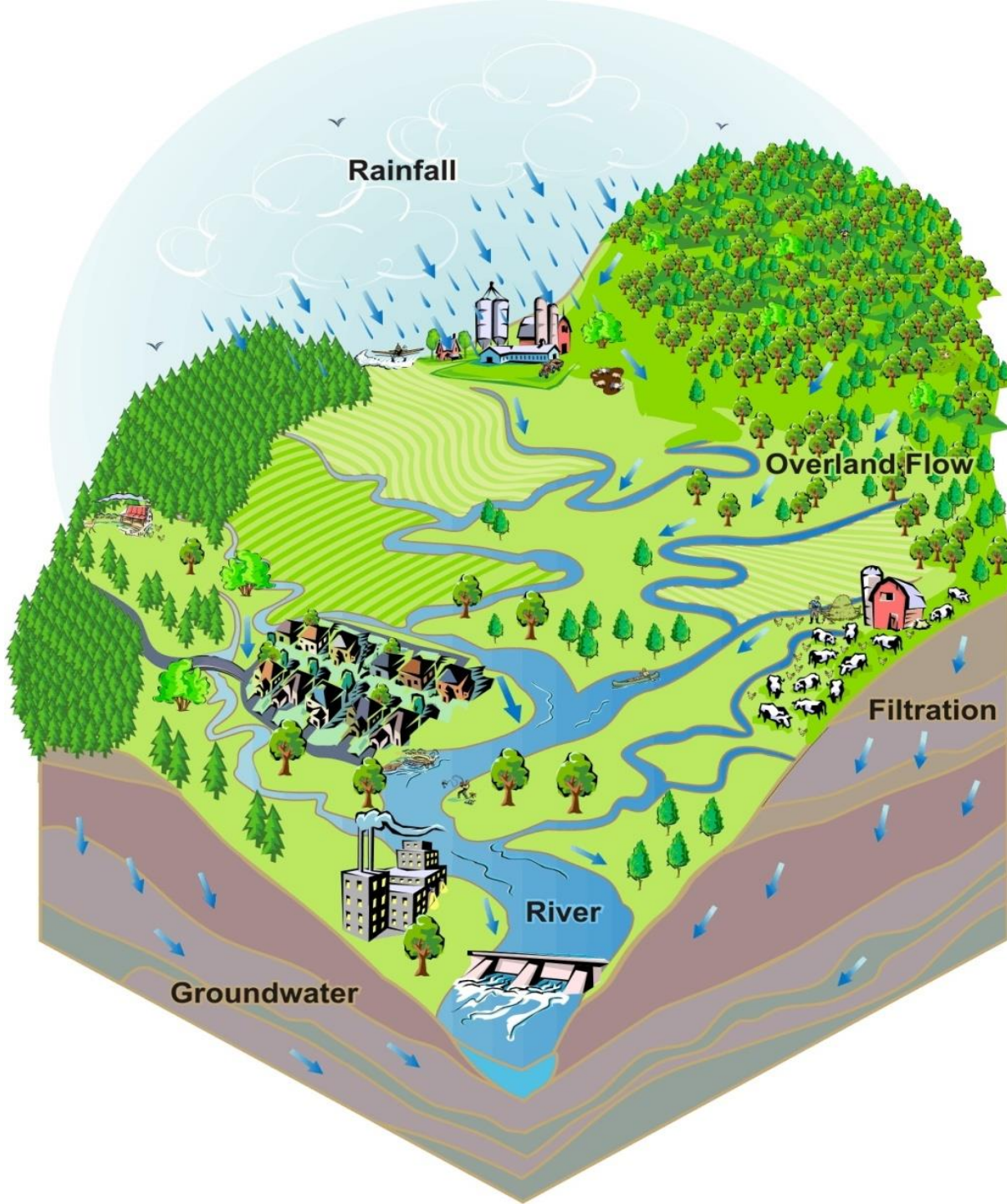


Sediment in Chesapeake Bay



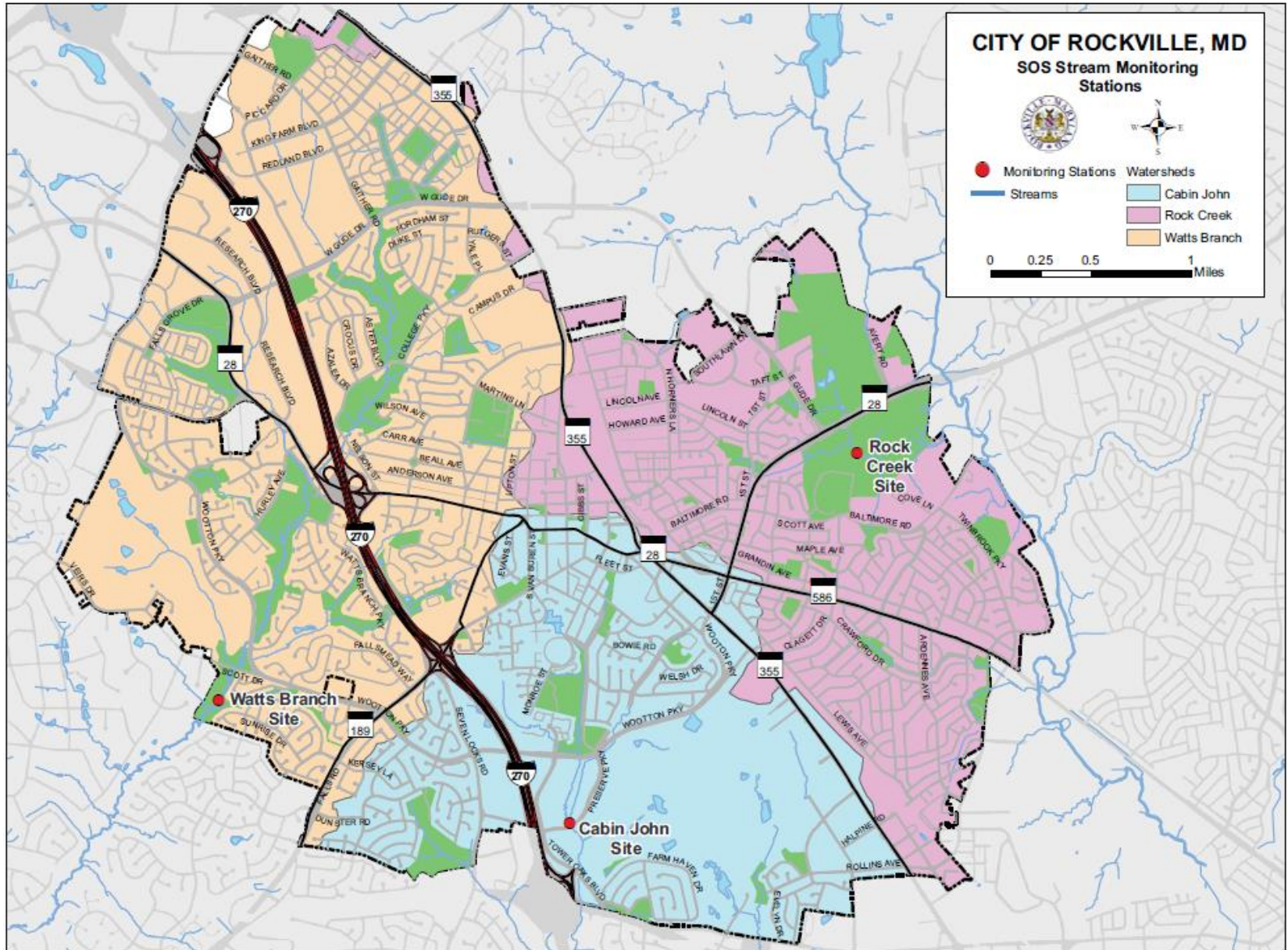
# What is a watershed?

“land area from which all water, and everything carried by that water, flows or drains into a common river, lake, ocean, or other body of water”








# Rockville's three watersheds





**Rock Creek**  
**Cabin John Creek**  
**Watts Branch**  
  
**Potomac River**  
  
**Chesapeake Bay**  
  
**Atlantic Ocean**

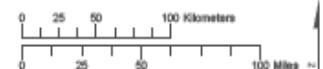
## Cheapeake Bay Tributary Basins



-  Tributary Basin Boundary
-  Chesapeake Bay Watershed
-  Chesapeake Bay
-  State Boundary



Data Sources: Chesapeake Bay Program  
For more information, visit [www.chesapeakebay.net](http://www.chesapeakebay.net)  
Disclaimer: [www.chesapeakebay.net/footer.htm](http://www.chesapeakebay.net/footer.htm)





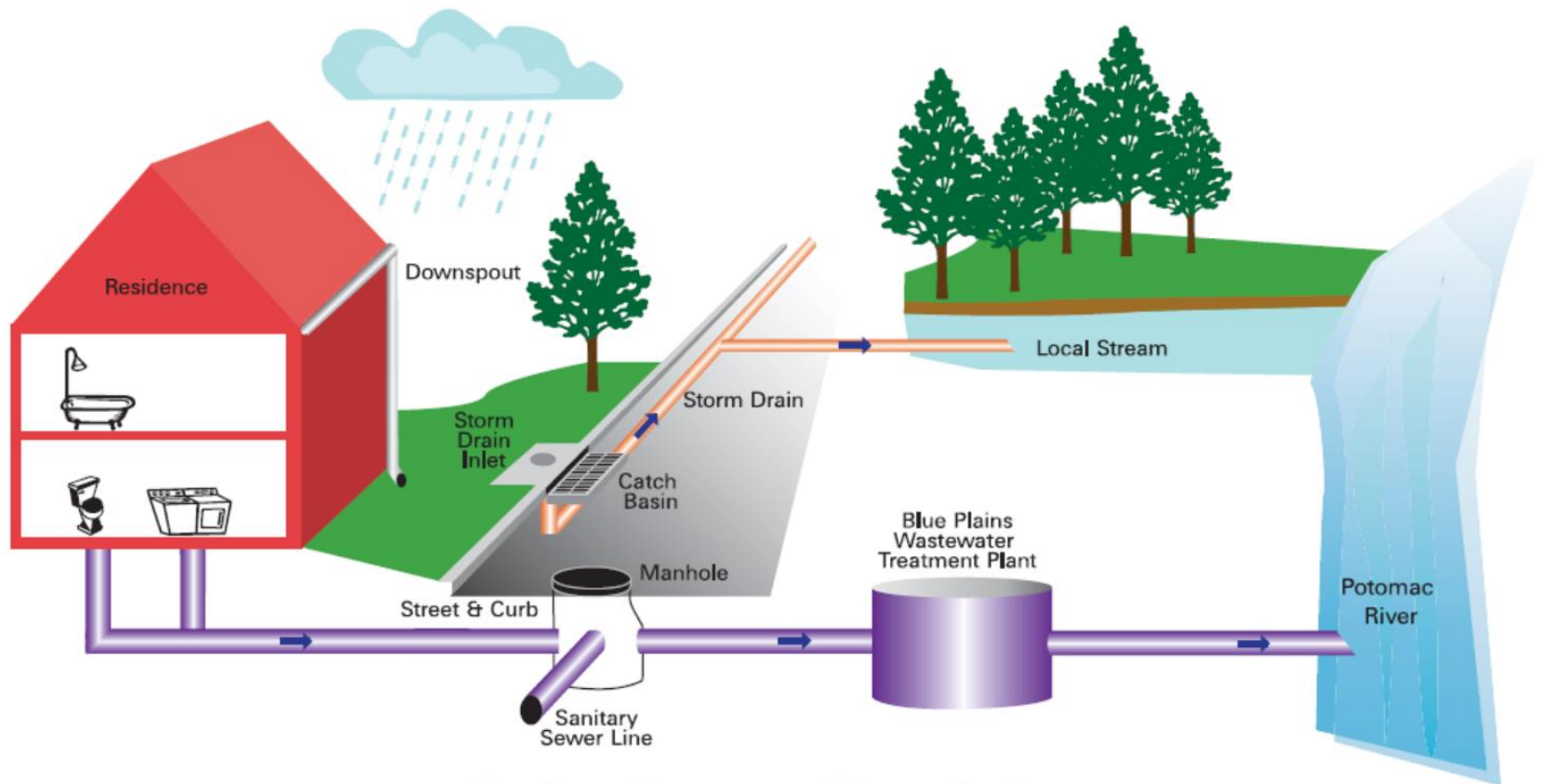
# What is stormwater?

Stormwater is rain and snow melt that runs off surfaces such as rooftops, paved streets, highways, and parking lots.





# Sanitary Sewers and Storm Drains: What is the difference?



**Sanitary Sewer vs. Storm Drain**  
**Do you Know the Difference?**



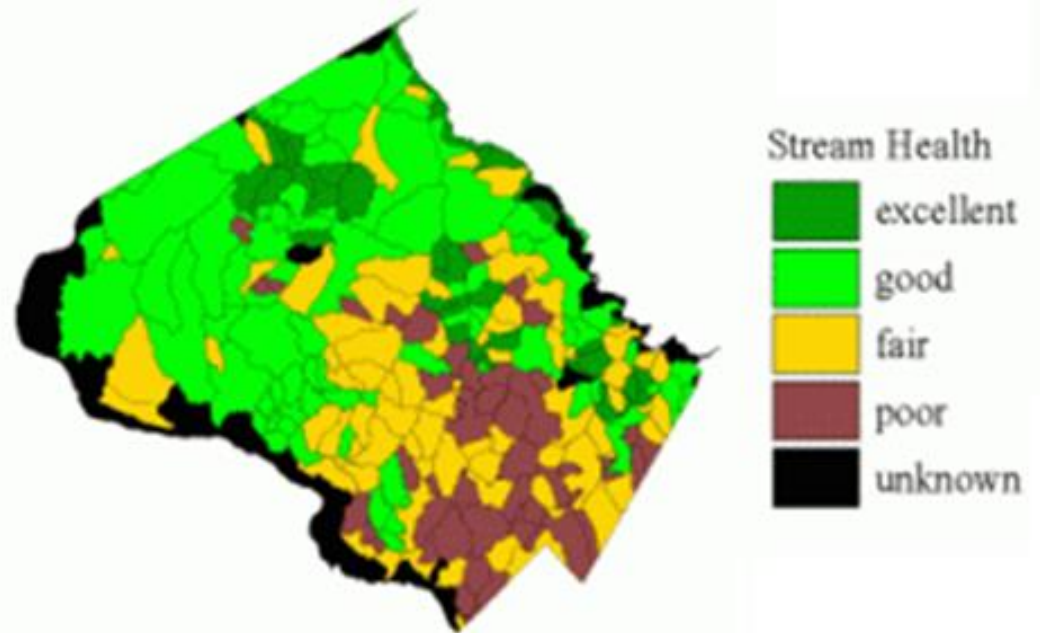
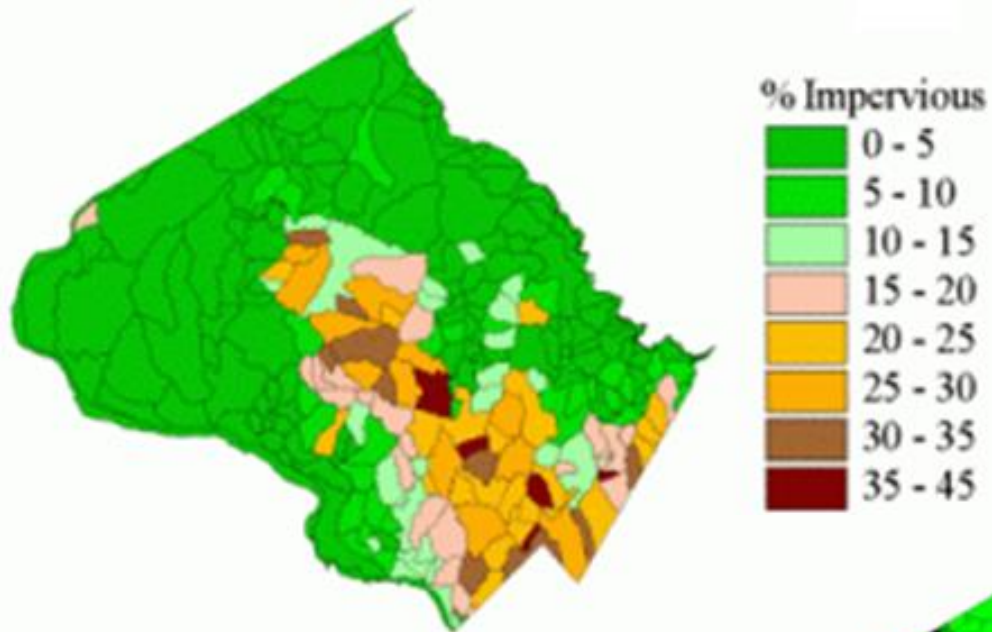
# stormwater runoff =

- Flooding
- Erosion
- Sedimentation
- Pollutant transport
- “Flashy” streams





# Development and stream health







The gardening-  
stormwater connections  
starts at home!



## Rain Barrels

\$1/gallon

min: 55 gal. max: \$500

## Conservation Landscaping

\$1 or \$2/sq. ft.

min: 250 sq. ft., max: \$750

## Tree Canopy

\$150/tree

max: \$600

## Pavement Removal

\$3 or \$4/sq. ft

min: 100 sq. ft. max: \$1,200

# Pavement Removal Rebate *New!*

Improved aesthetics

Reduced erosion

More green space

Reduced polluted runoff

Improved air and water quality

Enhanced wildlife habitat







Before



After

1. Remove impervious surface
2. Remove gravel base

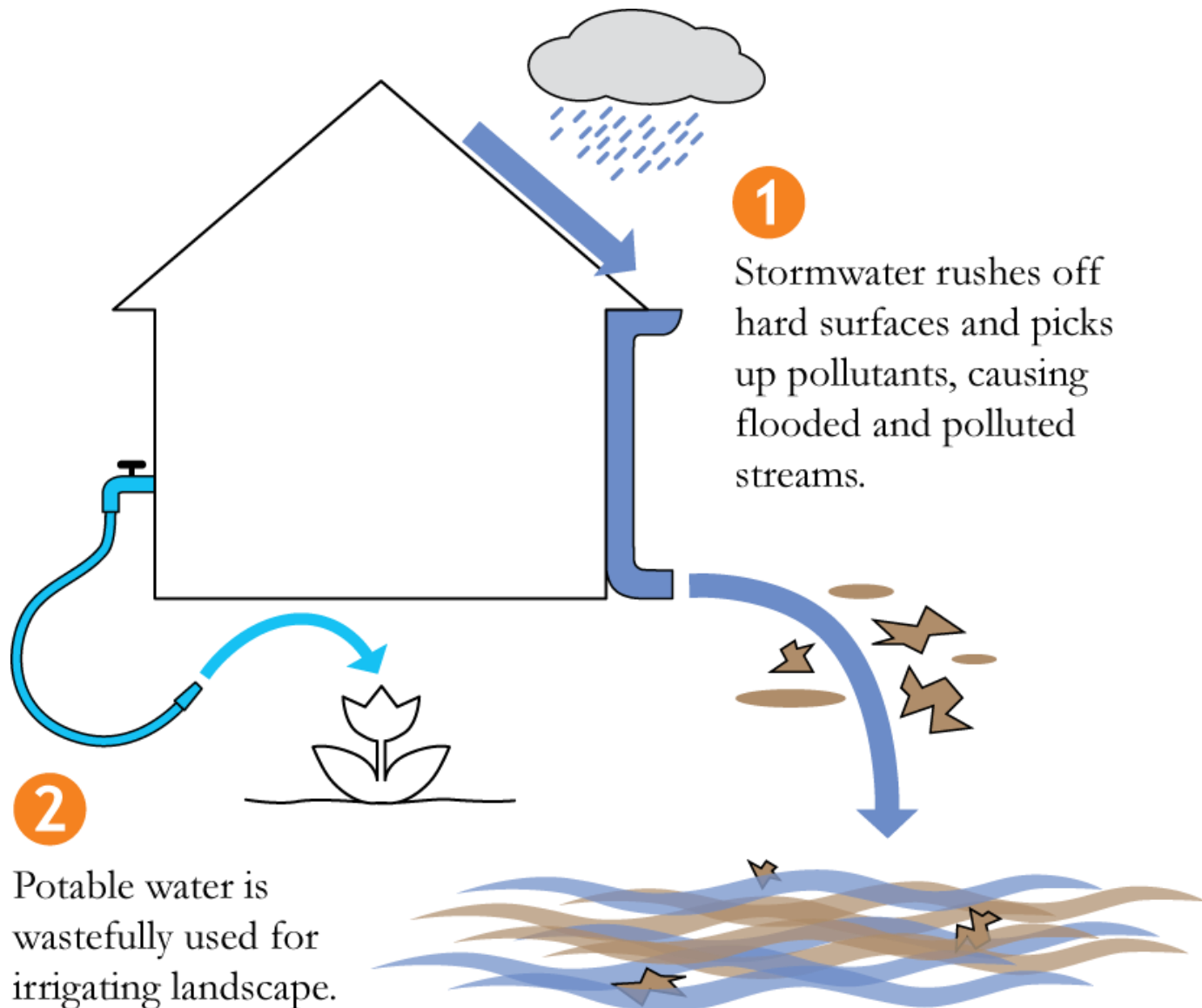
1. Decompect and add compost
2. Plant native plants or turf

# Rain Barrels

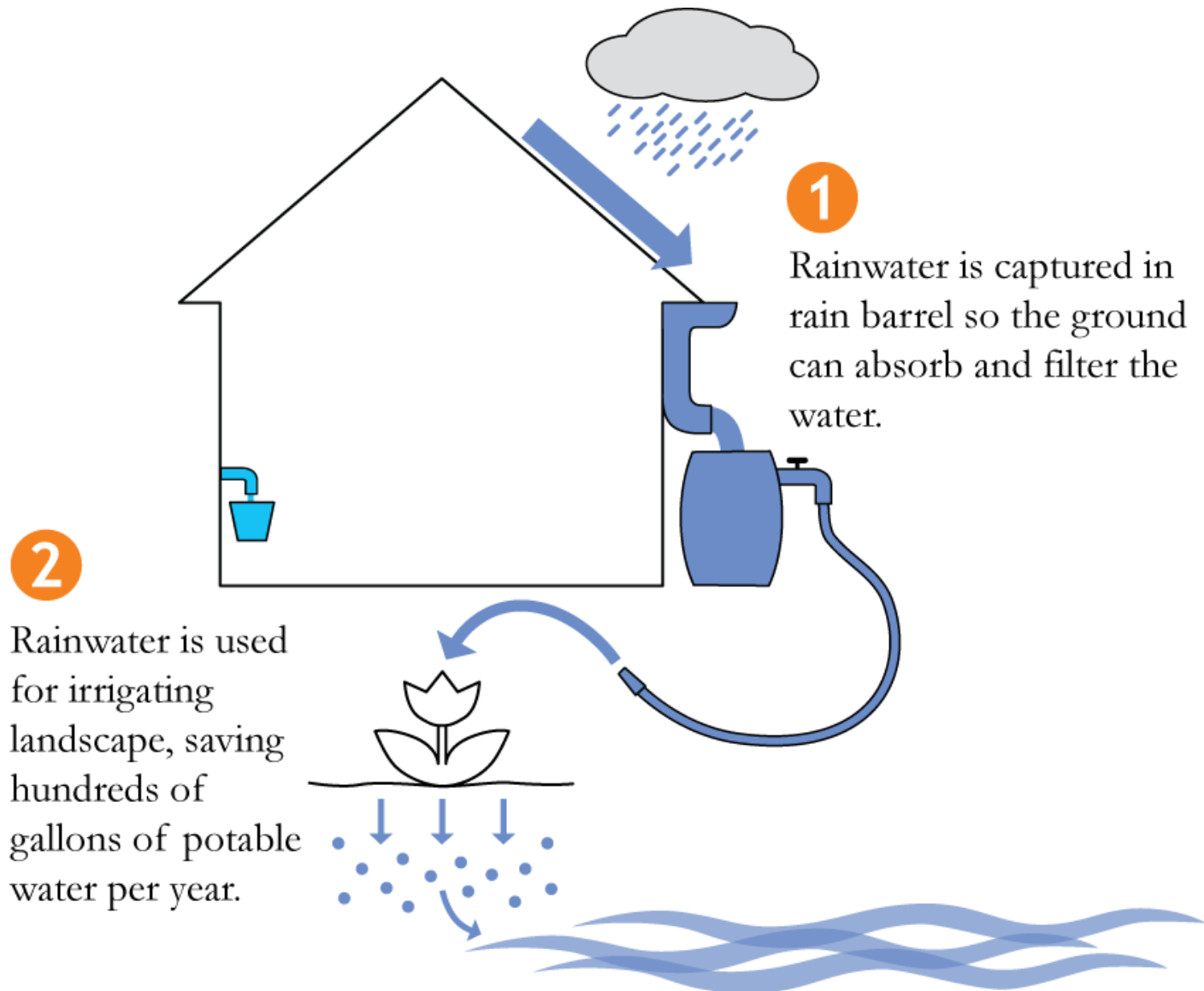




# Typical residential scenario



# Rain barrel benefits



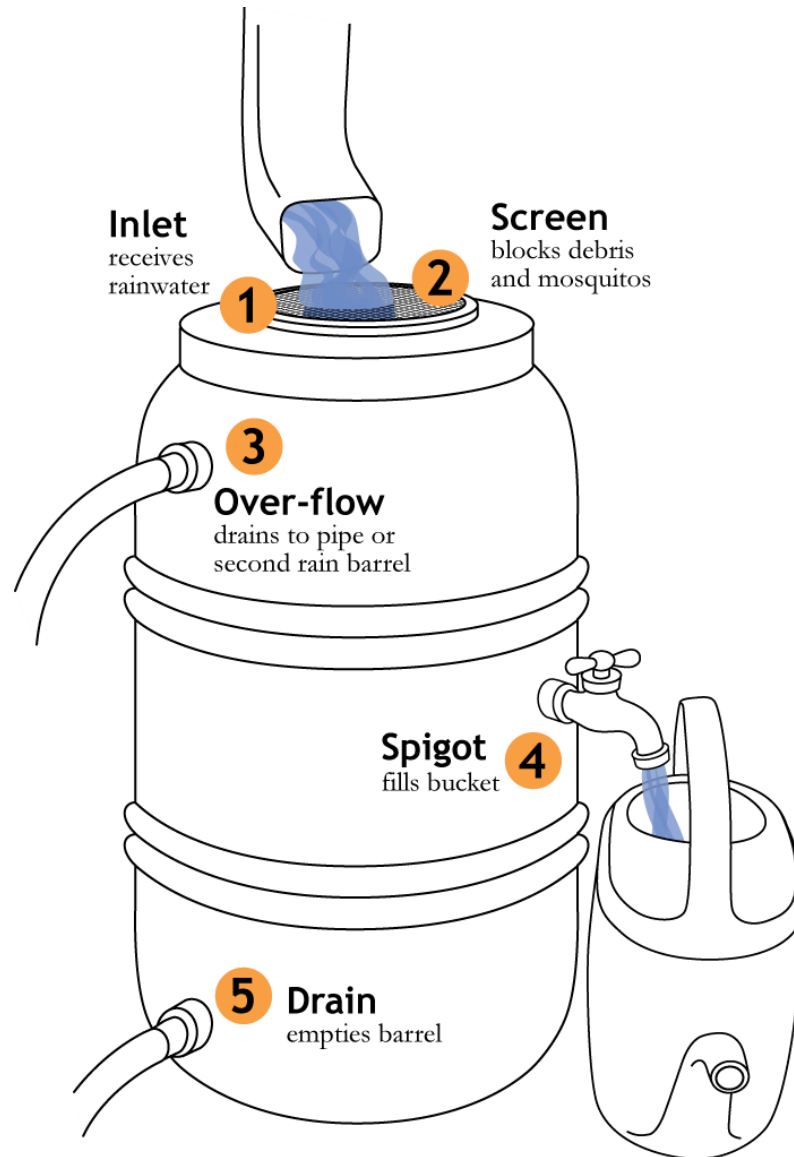


# What is a rain barrel?

- .A device for small-scale rainwater harvesting
- .A stormwater management tool
- .Collect, store, use rainwater
- .Recycled or purpose-built
- .Often 55 gallons



# Anatomy of a rain barrel





# Design Decision

Where are the downspouts?  
Where will I use the water?  
How much water can I use?  
How visible will the barrel be?  
What will the barrel look like?



# Create a stable base

One gallon of water weighs 8.3 pounds  
55 gallons = over 450 pounds





# Modify Downspout (Getting water into the barrel)

## **Option 1: Redirect entire flow to barrel**

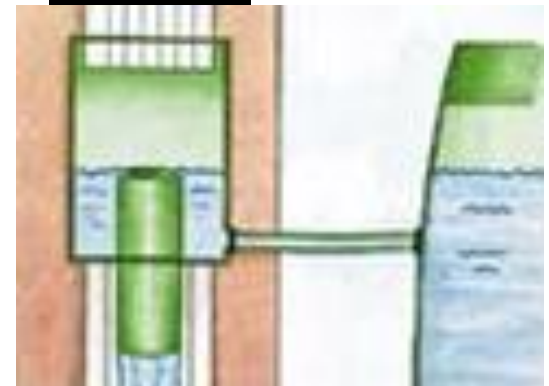
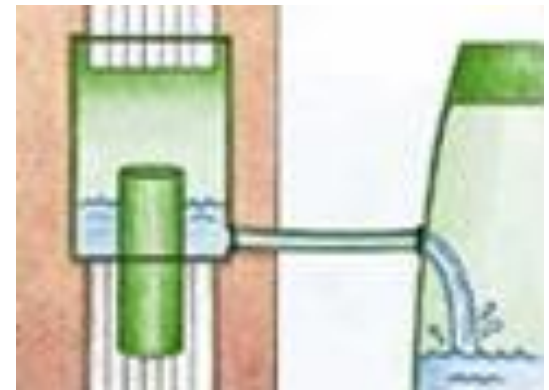
- .Make simple changes to downspout, or use diverter
- .Requires an overflow port
- ."On/off" capability recommended for winter



# Modify Downspout (Getting water into the barrel)

## **Option 2: Divert a portion of the flow**

- .Several diverter models available
- .Overflow returns to downspout
- .Easy to take offline in winter





# Install barrel and fittings



-Attach Spigot



-Install screen



-Attach outflow hose



-Attach overflow  
hose



-Secure lid

# Routine maintenance

- Keep gutters clear
- Periodically clean the screen
- Clean well at least once per year with soap and water or biodegradable cleaner
- Empty barrel fully
- Keep lid secured
- Add mosquito pellets (if needed)





# Mosquitos



Potential mosquito habitats  
in and around your home

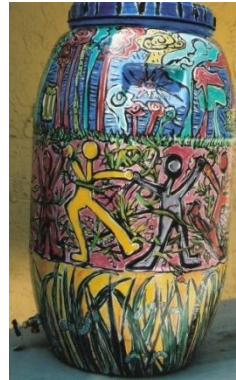
# Winter maintenance

- Empty the barrel
- Store indoors or upside down
- Redirect flow onto the yard at least 6' from house

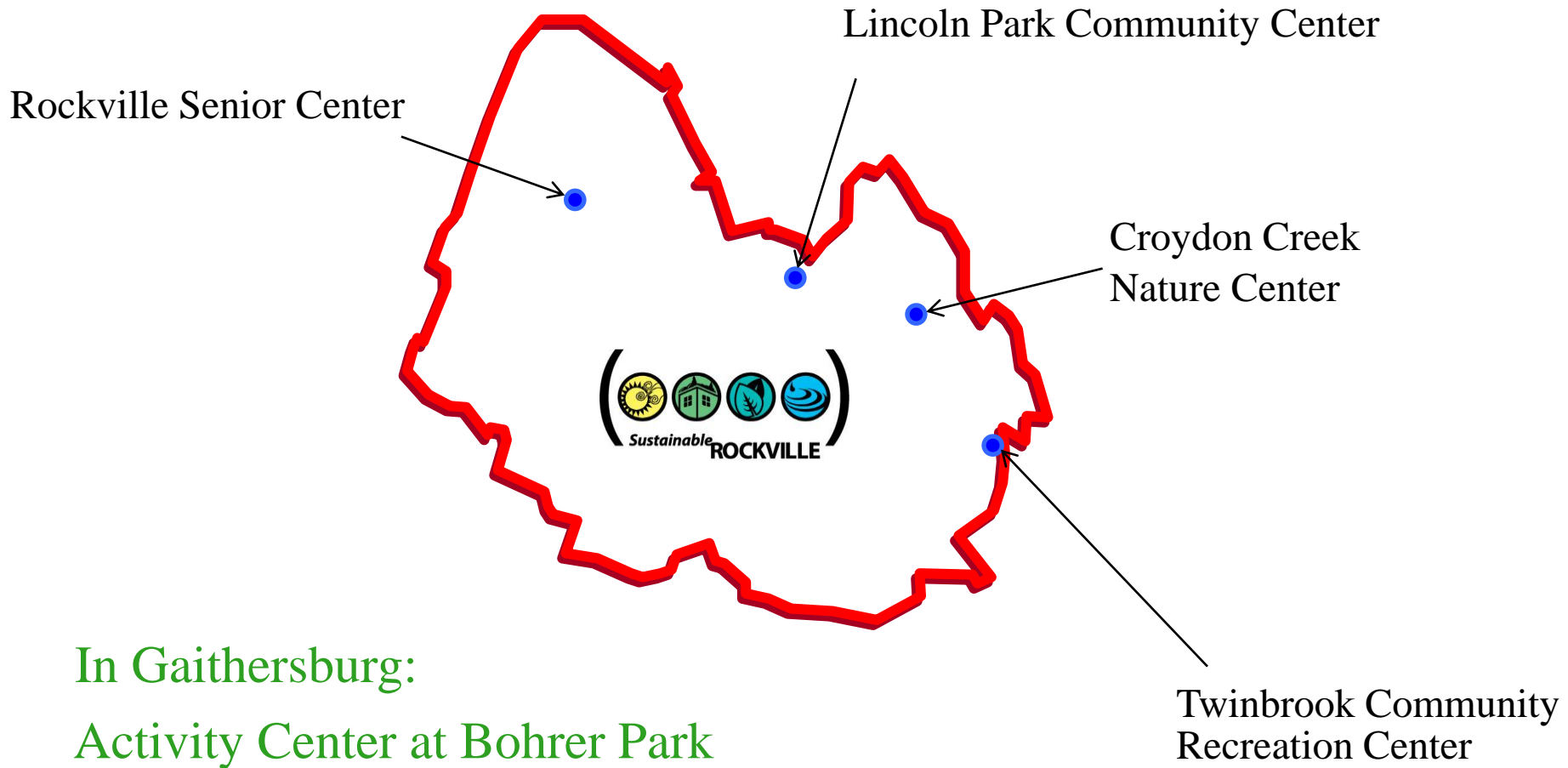




# Finishing touches



# City of Rockville installations





# Rockville Rain Barrel Video Series!

[rockvillemd.gov/environment](http://rockvillemd.gov/environment)



## **Part 1: The Secret Life of Stormwater**

Part 1, "The Secret life of Stormwater," discusses things that you may not have known about stormwater. Easy ways you can save the environment like picking up after your dog or putting in a rain barrel.



## **Part 2: Is a Rain Barrel for You?**

Part 2 in the RainScape series, "Is a Rain Barrel Right For You.?", helps you figure out the best place to install a rain barrel. Find out how much it costs, and what important characteristics to look for when you are ready to purchase a rain barrel.



## **Part 3: Installing your Rain Barrel**

Part 3 in the RainScape series, "Installing Your Rain Barrel," demonstrates how properly installed rain barrels save money, water and help your garden grow. This video will show you the steps to installing both a top filling and side-filling rain barrel, as well as the importance of diverting the overflow water.



## **Part 4: Maintaining your Rain Barrel**

In the final video of our Rainscapes series, "Maintaining Your Rain Barrel," you will learn how to effectively take care and use your barrel. You will learn how to handle mosquitoes, get ready for storms, and preparing for winter

# Where to use the water



Attach a hose



Keep barrel near  
garden



Drain with soaker hose

**Break and Questions**  
**Check out our rain barrel and parts!**



# What is Conservation Landscaping?



Fishman/Jessup

“Landscaping with specific goals of reducing pollution and improving the local environment.”

USFWS Slattery, Reshetiloff, and Zwicker (2003)



# Why Conservation Landscaping?

- Reduces air and water pollution
- Conserves non-renewable resources such as fuel and water

Helps maintain regional biodiversity

Helps eradicate non-native invasive species





## Conservation Landscaping Guidelines and Criteria

- Area to be planted (turf or non-native invasive plants) must be at least 250 square feet
- Three-inch mulch layer required
- No plastic sheeting
- A planting plan
- $\frac{3}{4}$  must be native, no non-native invasives
- Soil Improvement (higher rebate option)

# Plant Language

**Native:** Any plant that historically grew in this REGION.

**Alien/Non-Native:** plants that occur outside their natural range boundaries (most often is mediated by humans either deliberately or unintentionally).

**Invasive species** means an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health. *Executive Order 13112*



## ENGLISH IVY

Three- to five-lobed pointed dark green leaves are arranged alternately; black fruit on mature climbing specimens.



# Why go native?

Native plants:

- more adaptable to local climate and soils
- more resistant to insects and disease, less pesticides which run off lawns and contaminate local waterways
- attract and sustain more wildlife
- help to prevent erosion and pollution by stabilizing the soil and slowing the flow of rainwater runoff



# Getting to the Root of the Problem

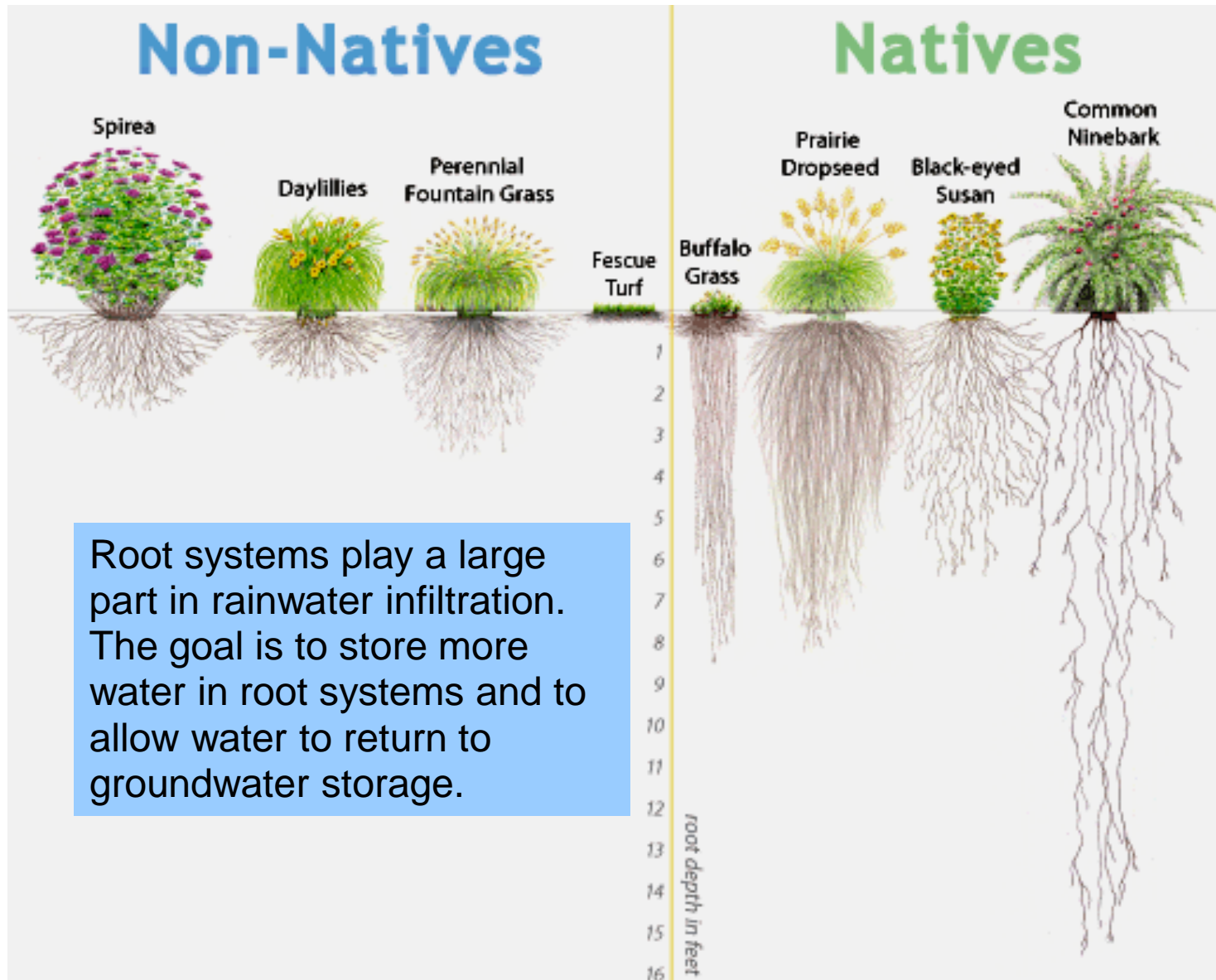






Photo: Goodman/ Farrelly

# Obtaining Native Plants

- Local nurseries, some big box stores (Home Depot and Lowes) carry natives. Ex: “BayScapes”
- Where possible, select species native to Chesapeake Bay Piedmont, not just U.S.

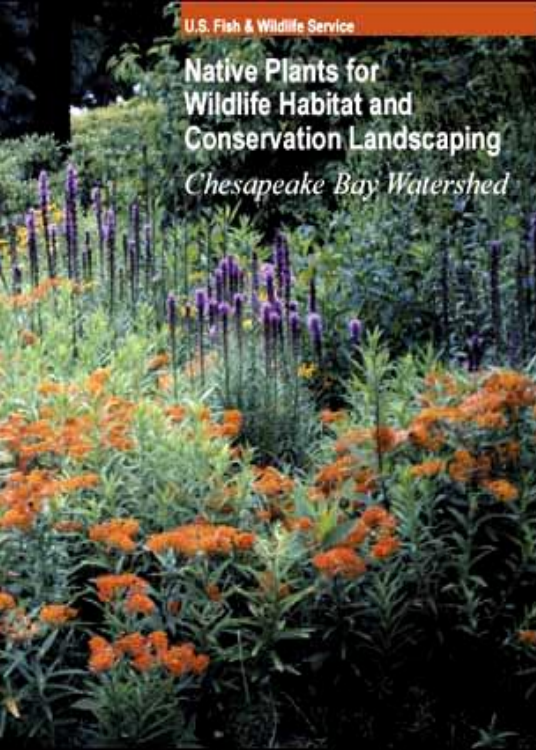
- Do not remove from the wild unless an area is about to be developed
- Remember... once established, native plants will reduce your labor and maintenance costs and invite wildlife to your yard





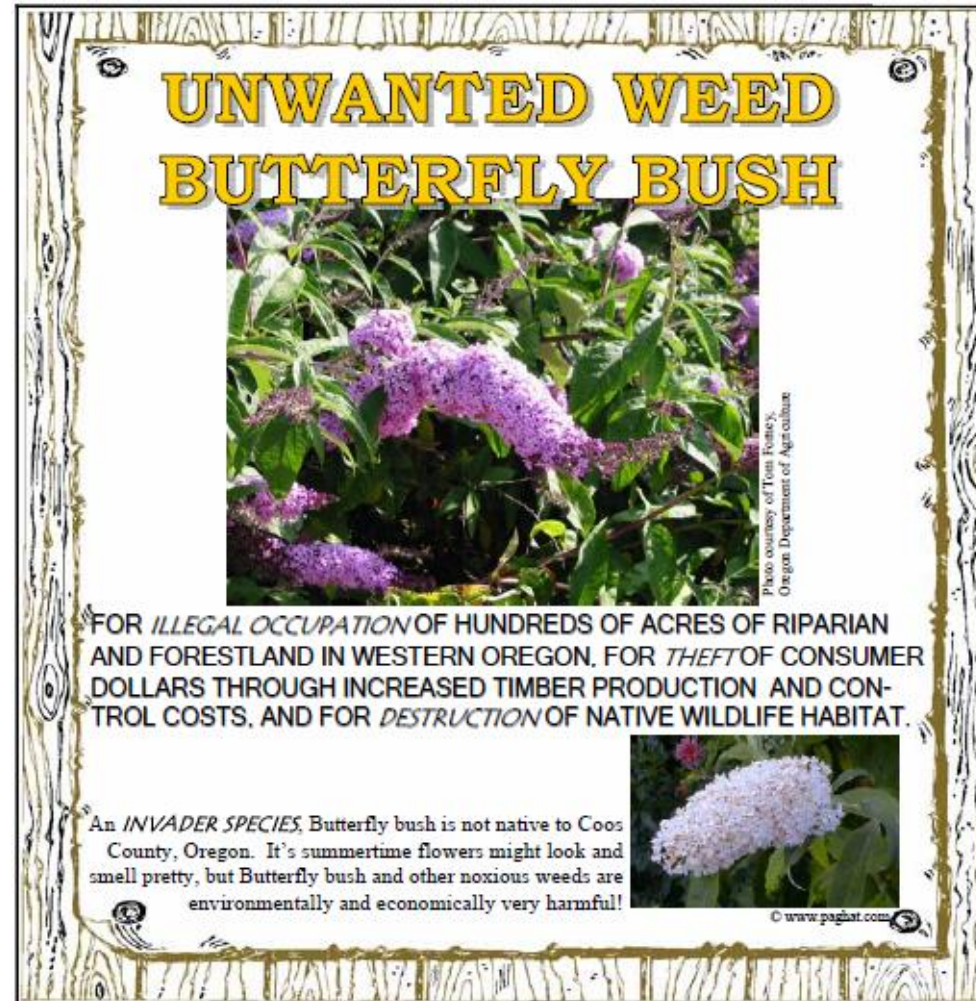
# How to Use the Guide

- Plant Names and Types
- Groundcovers: Consider plants listed as GC in notes
- Characteristics
  - Height
  - Flowers: bloom period and flower color
  - Fruit: fruiting period, color, and type
  - Fall color
- Growth Conditions
- Habitat



# Why all the negative talk about Non-Native Invasive Plants (NNIs)?

- Competes with native plants for water, pollinators, nutrients and sunlight.
- **Lack natural predators** that keep them in check in their native home.
- **Very difficult to control**, but possible through educating the public on their identification and Best Management Practices for removal.





# Common Invasives in Rockville



**Japanese knotweed**

*Polygonum cuspidatum*

Britt Slattery, USFWS



**Japanese stilt grass**

■ *Microstegium vimineum* Ted Bodner



**lesser celandine**

*Ranunculus ficaria*

Jil Swearingen, NPS



**Canada thistle**

*Cirsium arvense*

Britt Slattery, USFWS



**garlic mustard**

*Alliaria petiolata*

Britt Slattery, USFWS



# Alternatives: Native Herbaceous Plants



**obedient plant**  
*Physostegia virginiana*



**New York fern**  
*Thelypteris noveboracensis*



**wild geranium**  
*Geraniums maculatum*



**foam flower**  
*Tiarella cordifolia*



**creeping phlox**  
*Phlox stolonifera*

# The Sinewy Seven:



**English Ivy**  
*Hedera helix*  
USDA, NRCS



**Japanese Honeysuckle**  
*Lonicera japonica*  
J.D. Ruffner, USDA



**Oriental Bittersweet**  
*Celastrus orbiculatus*



**Kudzu**  
*Pueraria montana*  
David Moorhead



**mile-a-minute vine**  
*Polygonum perfoliatum* Britt  
Slattery, USFWS



**winter creeper**  
*Euonymus fortunei*  
James H. Miller



**porcelain berry**  
*brevipedunculata* Jil Swearingen, NPS





# Alternatives: Native Vines



**trumpet honeysuckle**

*Lonicera sempervirens* Britt  
Slattery, USFWS



**virgin's bower**

*Clematis virginiana*  
Britt Slattery, USFWS



**passionflower**

*Passiflora incarnata*  
R. Harrison Wiegand



**trumpet creeper**

*Campsis radicans*



# Conservation Garden Templates

## Piedmont Region Chesapeake Bay Watershed



Courtesy Goodman/Farrelly



***RainScapes Landscape  
Professionals List at  
[montgomerycountymd.gov](http://montgomerycountymd.gov)!***

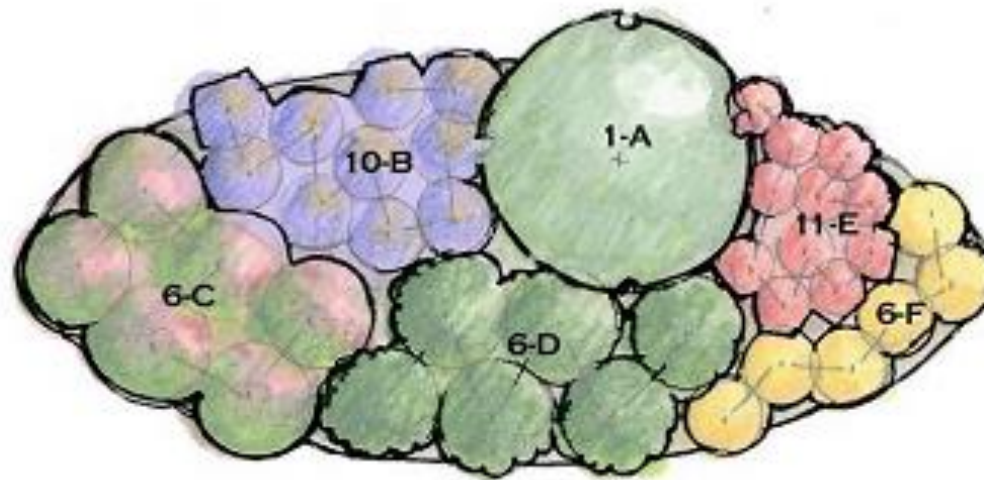
# Sunny Low Maintenance & Deer "Resistant" Garden



*Aster novae-angliae*  
New England Aster



*Monarda didyma*  
Bee Balm



*Clethra alnifolia*  
'Ruby Spice'  
Summersweet



*Betula nigra*  
River Birch



*Aesclepias tuberosa*  
Butterfly Weed



*Solidago nemoralis*  
Dwarf Goldenrod

Scale: 1/8"=1'





# Designing a Conservation Landscape

## Things to think about

- **Goals and needs**

- Create wildlife habitat
- Improve water quality
- Create privacy

- **Site Analysis**

- Existing vegetation
- Sun/shade and microclimates
- Drainage
- Soil conditions

**REMEMBER, call MISS Utility 800-257-7777  
before you dig!**



# Turf Removal and Disposal

The City of Rockville is asking you to remove turf... But how?





# Turf Removal and Disposal

The City of Rockville is asking you to remove turf... But how?



# Soil Improvement

Soil beneath sod or pavement is usually compacted.

## How to improve your soil:

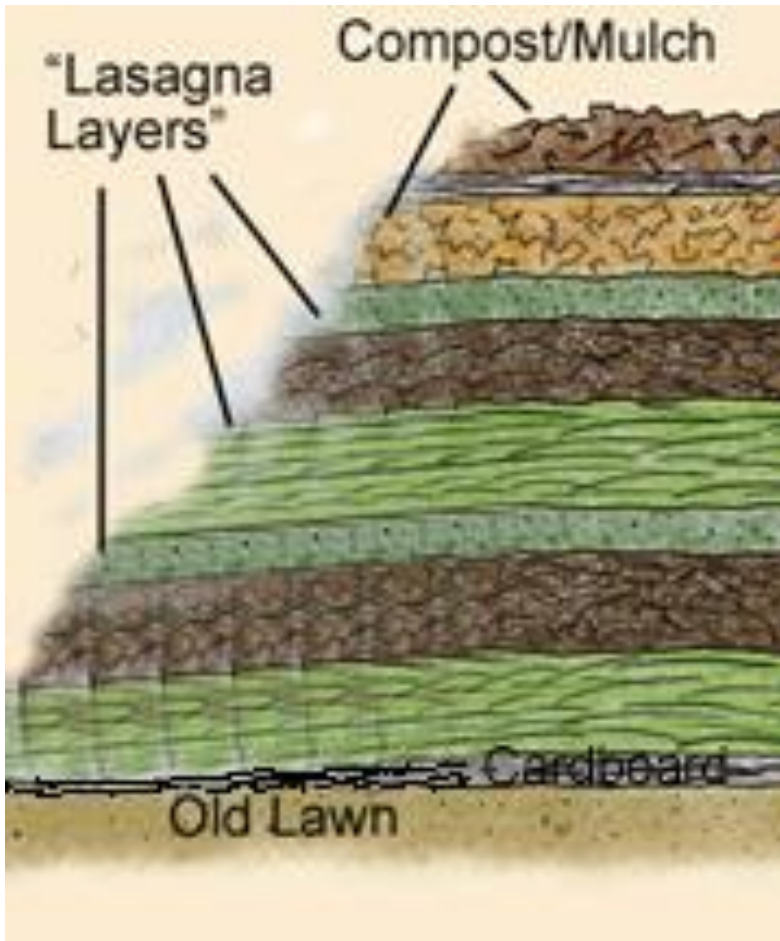
1. **Decompact** soil up to 9 inches with shovel or tiller
2. **Add compost**, at least 2 inches
3. **Mix** soil and compost evenly throughout bed
4. **Protect** from erosion with mulch or straw

### ***Benefits***

- *Plant roots thrive in loose, aerated soil*
- *Compost adds nutrient's and organic matter*
  - *Allows more water infiltration*
  - ***Higher rebate!***



# Sheet or “Lasagna” Gardening



- Cardboard or newspapers.
- Two to three inches of moist topsoil or peat moss
- Four to eight inches compost materials (grass clippings, leaves, manure, coffee grounds hay, etc.)
- Repeat layers of peat moss and compost materials
- Spread four inches of mulch on top

# Before and After





# Spring and Summer



\*2 years after install







Before





After





**Before**





After





**Before**



**After**



# Composting

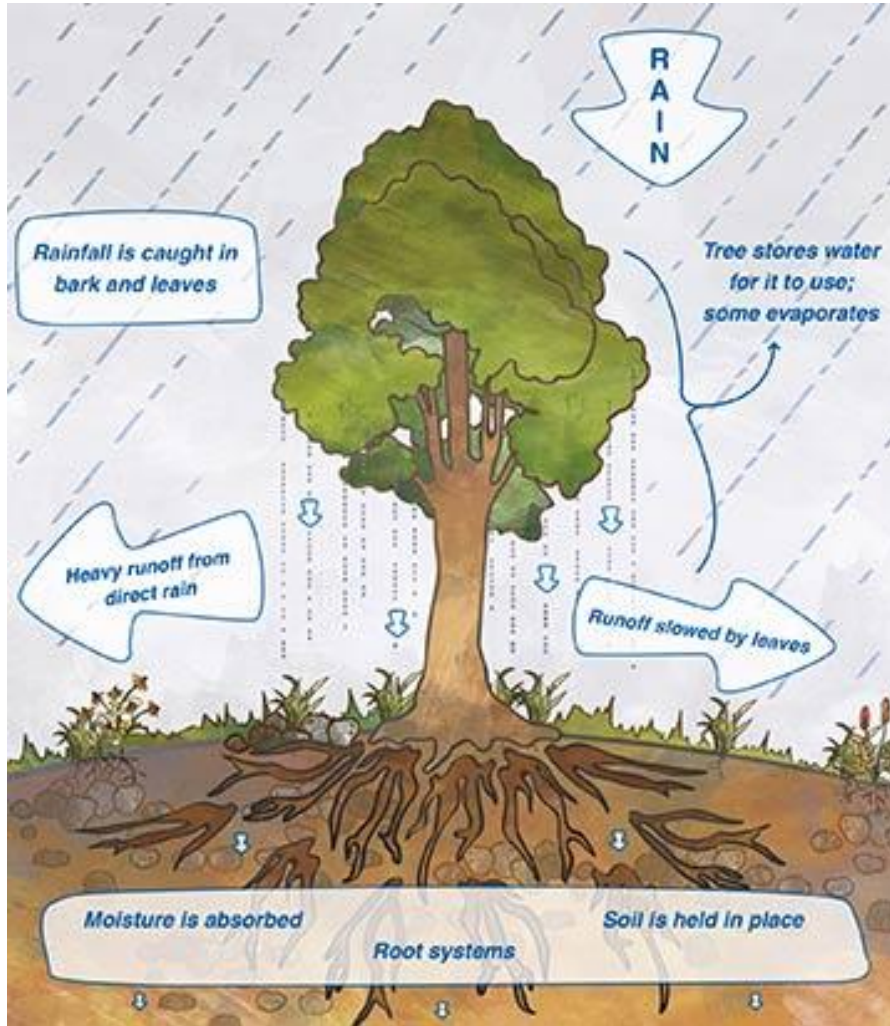
Compost is crumbly dark nutrient rich material made of decomposing organic material such as leaves, grass clippings, kitchen scraps (vegetables and fruits).

- Reduces waste
- Improves soils
- Add nutrients to soil and improves plant health
- Saves money by reducing need for chemical fertilizers

[howardcountymd.gov](http://howardcountymd.gov)



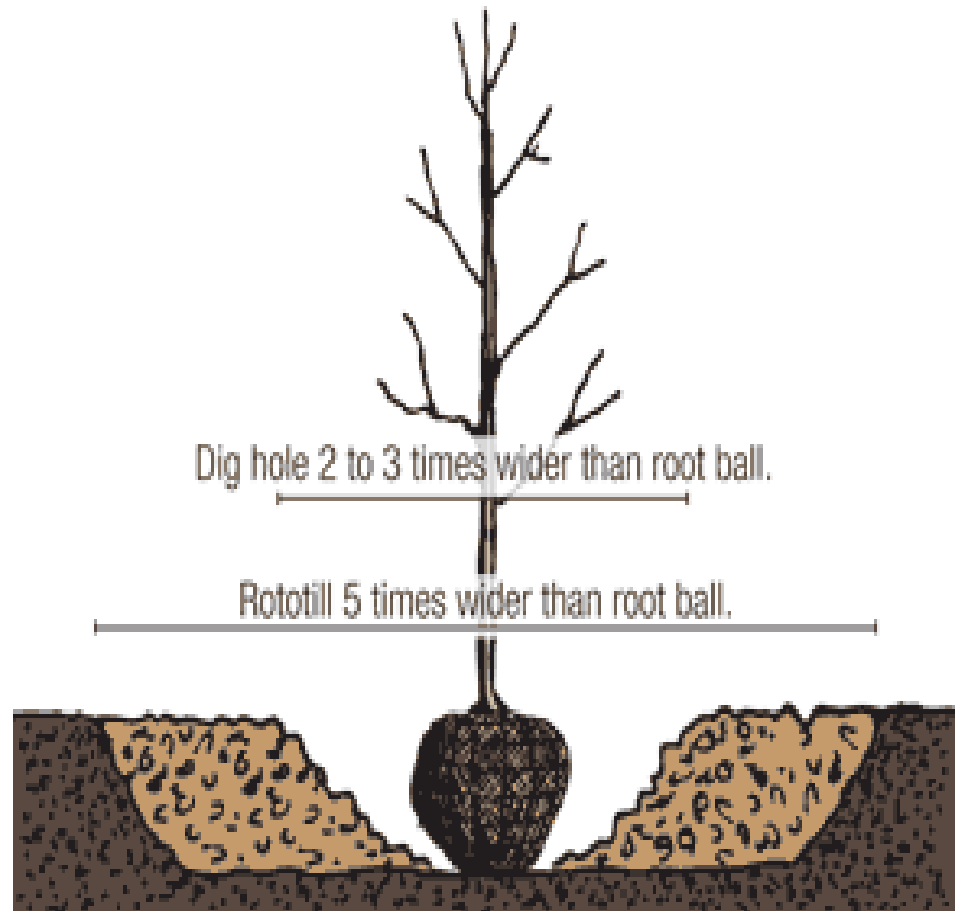
# Tree Canopy





# How to Plant a Tree

- ✓ Always handle by the root ball.
- ✓ Loosen root bundle and/or remove from pot
- ✓ Place straight up in center of hole.
- ✓ Top of root should be even or slightly above ground level.
- ✓ Backfill with original soil.
- ✓ 4" mulch later to entire disturbed area, but **do not let mulch touch trunk!**
- ✓ Water right away.



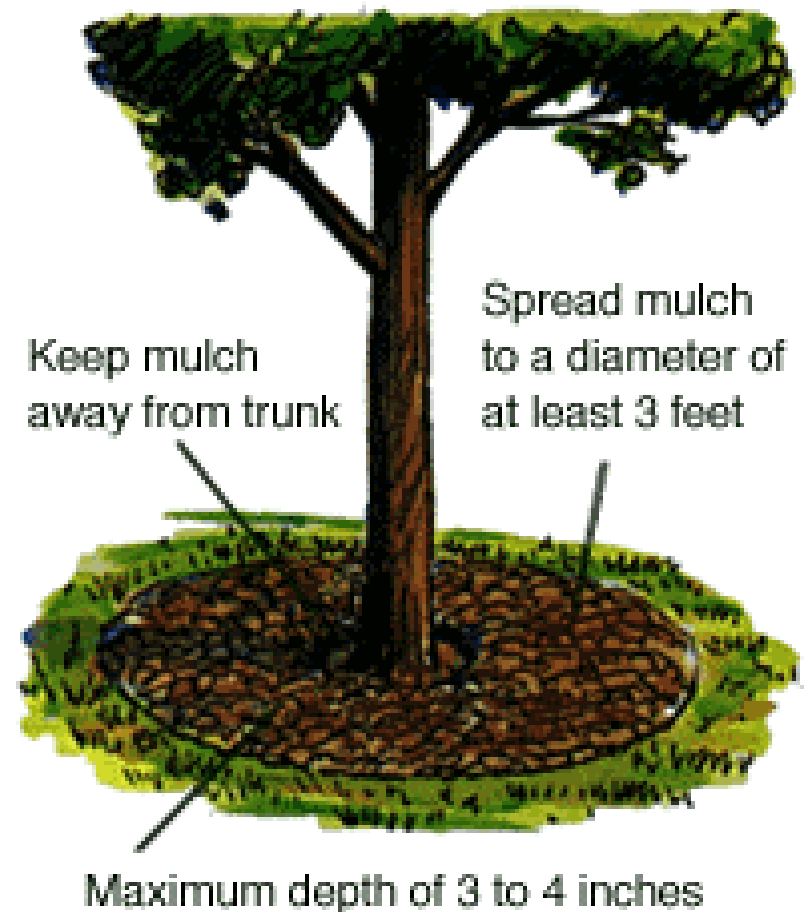
# Tree Care and Maintenance

## Mulching

- Retains soil moisture
- Suppresses weed growth
- Moderates soil temperatures
- Improves soil fertility

## Watering

- Water for recently planted trees is essential!
- 3-5 gallons a week, if it doesn't rain, is ideal.
- Water slowly to avoid runoff.
- Browning, wilting, scorch, and dieback are most





# Other Techniques

Downspout disconnect



Pavement Removal



Rain gardens



Green roof



Dry well



Pavement Removal



# Fertilizers

Excess  
Nitrogen and  
Phosphorus



Algae blooms



Decreased  
oxygen



Dead zones





# **Sustainable Lawn Care**

## **A healthy lawn without fertilizers**

- Test your soil every 3-4 years.
- Mow at a height of three inches.
- Don't fertilizer trees and shrubs if they appear healthy
- Mulch grass clippings and leaves into yard.
- Consider native grasses or groundcovers where turf won't grow. Ex. sedum, creeping phlox.
- Reduce pesticide use. Spot treat weeds with vinegar.

# Why test your soil?

Why test your soil?

Learn valuable information like PH, lime, and fertilizer requirements.

When should I test?

Every 3 to 4 years.

Where can I get more information?

Maryland Ag Extension Fact Sheet.

## Basic Soil Nutrients

Nitrogen (N) – leaf and root growth

Phosphorus (P) – early plant development

Potassium (K) – hardiness



# How to Fertilize Your Lawn

- Use less than the recommended on fertilizer packages.
- Pick slow release, water insoluble fertilizers, and organic alternatives like alfalfa meal.
- Reduce or eliminate fertilizer on well established beds.
- Fertilize in fall.
- Keep fertilizer off hard surfaces.
- Fertilize before steady light rain, but not before heavy storm.
- Do not use fertilizer to melt ice.

# Composting

Compost is crumbly dark nutrient rich material made of decomposing organic material such as leaves, grass clippings, kitchen scraps (vegetables and fruits).

- Reduces waste
- Improves soils
- Add nutrients to soil and improves plant health
- Saves money by reducing need for chemical fertilizers



[howardcountymd.gov](http://howardcountymd.gov)

## Montgomery County gives away free compost bins!

**Montgomery County Executive Office Building  
Division of Solid Waste Services  
101 Monroe Street, Sixth Floor  
Rockville, Maryland 20850**

**Whole Foods Market  
11355 Woodglenn Drive  
Rockville, Maryland 20852  
301-984-4880**

**Shady Grove Transfer Station**

**Greens (nitrogen, protein):**  
leaves, pine needles, twigs, straw,  
paper, cardboard.

**Browns (carbon):**  
grass clippings, tea bags, fruit and  
veggie scraps, egg shells.



# Don't have a lot of space?

## Try a vermicompost!

- Worms turn organic waste into nutrient-rich compost
- Use non-invasive worms like red wigglers
- UMD Agricultural Extension Fact Sheet



Photos: watershedactivities.com

# What to do with your compost

- Incorporate into soil.
- Add to established beds or when creating beds.
- Use two inches of compost as mulch to keep the soil cooler, retain moisture, and add nutrients over the growing season.
- Use it to make compost tea, which has multiple benefits including beneficial microbes and organic nutrients.
- **Best thing you can do for lawn health is add organic matter!**



# Pet Waste: Scoop the Poop!

The problem with pet waste:

- Excess nitrogen leads to cloudy, algae infested waters, depleting oxygen and killing underwater life.
- Bacteria and parasites including E.coli, salmonella, and toxoplasma can be carried in pet waste and infect humans and other animals.
- It is illegal to leave pet waste where it drops in the City of Rockville!
- Violators may receive up to \$1,000 fine.



# Pet Waste: Scoop the Poop!

Safely dispose of pet waste:

- Flush it
- Trash it
- Pet Waste Stations →
- Hire a Pooper Scooper





# In Your Home

Fats, Oils, and Grease



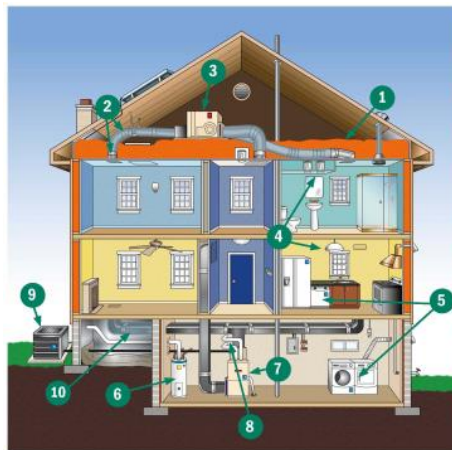
Water Conservation



Recycling



Energy Audits



After Home Performance

- 1 R-38 Attic Insulation
- 2 Tight Ducts
- 3 High Efficiency Heat Pump
- 4 CFLs
- 5 ENERGY STAR Appliances
- 6 High Efficiency Water Heater
- 7 High Efficiency Furnace
- 8 Combustion Testing
- 9 High Efficiency A/C
- 10 Insulated Tight Duct

Green Power Community Challenge



[www.rockvillemd.gov/environment](http://www.rockvillemd.gov/environment)

# Volunteer Opportunities

- Adopt-a-Stream
- Save Our Streams Citizen Monitoring Effort
- Storm drain marking
- Invasive plant pulls (Weed Warriors)
- Environment Commission







Questions?



Courtesy Goodman/Farrelly